

A METHOD OF IONIZING A LIQUID PROPELLANT AND AN ELECTRIC THRUSTER IMPLEMENTING SUCH A METHOD

Abstract

A method of ionizing a liquid propellant is disclosed herein. The method includes the steps of applying an electrical charge to a showerhead, delivering a liquid propellant under pressure into a chamber defined within the showerhead, and emitting the liquid propellant under pressure through a plurality of micro-nozzles interspaced within the face of the showerhead to create a plurality of jets that collectively produce an electrospray having charged particles. An electric thruster that implements such a method is also disclosed herein. The thruster includes a showerhead having an inlet and a plurality of micro-nozzles, a reservoir for supplying propellant to the showerhead via the inlet, means for accelerating charged particles, and a power source connected to the showerhead and the accelerating means. The propellant is emitted under pressure from the micro-nozzles to produce an electrospray having charged particles. The charged particles are accelerated by the accelerating means to produce thrust.